if there were no existing loops or switches in place. Such assumptions are only meaningful if this is indeed the relevant decision, such as might be the case in rebuilding a local exchange network that had been seriously damaged by war or natural disaster. Otherwise, the Commission's cost definition will be off the mark. One could perhaps defend the need to make some choices as a means of operationalizing the cost measurement. The question, however, is whether the Commission's particular set of assumptions corresponds to the decisions to which the cost measure would be applied.

42. Such a hybrid cost measure is necessarily off the mark. First, it cannot represent the costs of an entrant, which can choose where to locate its wire centers, as in Option 1. Thus, the cost measure is not relevant to the entry and operating decisions of a competitive entrant. Second, the cost measure cannot represent the costs of the incumbent, because the incumbent already has loops and switches in place, as in Option 2. Thus, the cost measure is not relevant to the expansion and operating decisions of an incumbent LEC.

2. Allocating Common Costs Arbitrarily

43. The Commission states at paragraph 221 of the *Notice* in this proceeding:

> An incumbent LEC's TSLRIC for a given service or facility, such as exchange access service, should include all incremental costs directly attributable, or dedicated, to the delivery of the service or facility in question. Carriers also should be allowed to recover a reasonable allocation of their forward-looking common costs, defined as those costs that are incurred in connection with the production of multiple products or services that remain unchanged as the relative proportion of those products or services varies. We note that when calculating the forward-looking economic cost of exchange access services, because these services share common network facilities with other incumbent LEC-provided services, such as local exchange service and intraLATA toll, fewer costs will be directly attributable or dedicated totally to exchange access services. Consequently, the incumbent LEC may need to recover significant common costs in addition to the TSLRIC of exchange access. These common costs should be recovered in a manner that is economically efficient and consistent with the pro-competitive goals of the 1996 Act. By contrast, the TELRIC of a specific facility, such the loop or the switch, would directly attribute to that facility all costs caused by that facility, regardless of the services provided by that facility. Consequently, the forward-looking common costs that the incumbent LEC must recover in addition to the TELRIC of that facility in order to recover forward-looking economic costs are lower than the forward-looking common

costs that need to be recovered for a service.[23]

The Commission's discussion asserts that the amount of common costs that should be recovered depends in a systematic way on the measure of incremental cost. This cost-based approach to pricing bears little relation to market-determined pricing. As we noted in paragraphs 51 through 55 of our initial affidavit, the Commission's two preferred approaches to determining economic cost—fully distributed cost pricing and reverse Ramsey pricing—create cost measures that are unrelated to economic cost. They create arbitrary allocations of common cost that have little to do with the market value of the products and services provided. As such, the arbitrary allocation of common cost is another illustration of the fallacy of forward-looking costs.

3. Jumping the Gun

44. The forward-looking cost rhetoric is aimed at estimating the replacement cost of network assets, a laudable objective. In its pricing recommendations and cost estimation methods, however, the Commission paints an incorrect portrait of how competitive pricing works. Technology and competitive entry occur with lags in competitive markets. Setting prices on the basis of competitors' costs is a good competitive strategy, but only when market alternatives are available. To use a "most efficient technology" standard, as the Commission recommends, is to jump the gun, because that standard is at variance with competitive markets.

45. To take a simple example, consider the evolution of semiconductors. The speed and computing power of each generation of computer chip has increased as chip manufacturers have developed new products such as Intel's 286, 386, 486, and Pentium chips. The price of a computer chip is highest when it is first introduced. The chip's price then begins a decline that depends in part on the rate of development of the next generation of chip; after the new chip is introduced, the price of the previous generation depends in part on the availability of the new chip. Thus, the pricing of chips is

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23. *Notice* ¶ 221.

affected by the lags in developing new technology and the lags in introducing products that embody the new technology. Existing products are not immediately devalued by new and improved substitutes. Rather, the adjustment process often is gradual.

46. If prices did not adjust gradually, there would be no incentive to engage in research and development or to invest in costly manufacturing to introduce any generation of products bearing new technology. Industry would be waiting for the next development before making a commitment. Thus no progress would occur. Instead, because of lags, companies earn a return on the current technology in the interim period before the new technology becomes available; after the new technology is introduced, the development cycle continues. To imagine that prices fall immediately as a new technology is spotted over the horizon would be to eliminate any incentives for R&D and investment in production.

47. Consider pricing when technological change occurs that lowers the cost of production. The firm expects its operating cost to be c_0. Technological change occurs and the operating cost of entrants is lower than the incumbent, say c_1. Suppose that incumbents and entrants have the same entry costs k (although the same argument applies if entry costs change as well). The incumbent expects to charge a price p. Should it change its price after the technological change occurs and the entrant's alternative makes its appearance? If the entrant does not have any capacity constraints, then c_1 will be the new market price. If the entrant does face capacity constraints, then c_1 will not be the new market price, which instead will fall with a lag. The lag is due to the adjustment costs of entry, which should be counted as part of the cost of the competitive alternative. Therefore, the price should not fall. That result will reflect the entrant's economic costs and provide incentives for entrants to incur the adjustment cost of entry. The incumbent's expectations would have taken this market lag into account. Thus, the best technology available is not a proper yardstick for the incumbent until the market alternative is no longer capacity-constrained. Put differently, the current market price reflects the projected cost of the alternative plus the adjustment cost associated with installing and adapting to the new production method.

48. The Commission is jumping the gun by recommending that access to the local exchange network reflect the most efficient technology before the market makes that technology available. Jumping the gun would eliminate incentives for incumbents to expand and upgrade their networks and for entrants to establish facilities. The prices of existing network facilities should adjust at *market-determined* rates that reflect the availability of facilities that embody the most efficient technology available. Jumping the gun could slow down the introduction of the most efficient technology that the Commission uses as its benchmark.

49. Moreover, how will the Commission know what is really the most efficient technology? Experience in telecommunications shows that there is rapid technological change in computers, optical transmission, wireless transmission, and network design. It is not realistic to presume that a government agency is better equipped than market participants to sort out these technological changes to determine which technology is the best available or most efficient. The process of price adjustment to technological change cannot be predetermined by government fiat; it can only be revealed through market competition. Not only are there incentive problems that could forestall the very innovation that the Commission is attempting to predict, but the information required to make the prediction is beyond the capabilities of administrative decision making.

4. Ignoring Investment-backed Expectations

50. Consider a basic example. Suppose that to carry out production a firm must invest k dollars. Suppose that the investment is irreversible, so that k represents sunk costs. The firm has operating costs c and expects to earn revenues R. The firm's economic rent is defined as revenues net of operating cost and investment cost, $R - c - k$. Economic rent provides the incentive for entry. The firm's economic quasi-rent is defined as net revenue, $R - c$. The quasi-rent provides incentives to stay in the industry after entry costs have been sunk. Having sunk k, the firm decides whether or not to produce on the basis of its comparison of R and c only. It would manifest the fallacy of sunk costs for

the firm to base the production decision on the magnitude of k. Thus, after k is sunk, only quasi-rents (not economic rents) affect the firm's decision whether or not to produce the good.

51. That condition does not mean that pricing should not take into account costs k. The fallacy of forward-looking costs ignores the expectations of the investor when the decision to invest k is made. Thus, the fallacy of forward-looking cost would be to base the investment decision on quasi-rents alone, ignoring the magnitude of k. *Before* the firm has sunk k, it is economic rents that count, not quasi-rents.

52. Buyers and sellers enter into contracts on the basis of economic rents. The purpose of contract law is to allow efficient contracts to form. Otherwise, without the protection of contract law, buyers and sellers would be tempted to behave opportunistically, taking advantage of the reliance on irreversible investment of the other party. To illustrate this point, suppose that R is determined by a buyer and seller negotiating a contract before k is sunk. After the parties enter into the contract, one of the parties sinks cost k. The other party then has an incentive to behave opportunistically by offering a payment that is only slightly above c, thus capturing the investor's quasi-rent. That situation cannot be justified by giving c the new label "forward-looking economic costs." Contract law protects the expectation, $R - c$, which equals the investor's quasi-rent. If the seller anticipated that the buyer could reduce the payment to c after the contract was formed, then the seller would have no incentive to make a transaction-specific investment in the first place.

53. To complicate matters, suppose that a new technology appears such that the replacement cost of capacity is lower than k, say k_1. Suppose that operating costs continue to equal c. The forward-looking costs of production are then equal to $c + k_1$. Again, that condition would not mean that the contract price should be reduced to forward-looking costs. The purpose of the contract is to protect the expectation interests of the buyer and seller. Thus, the price should remain at R. Forward-looking economic costs are not simply the firm's avoidable costs after it has made investments. If that were the case, there would be no transaction-specific investments.

54. It is now possible to see the efficiency of the expectation damage measure in contract law and its relation to the pricing of the regulated services of incumbent LECs, including interstate access. Suppose that the buyer contracts to pay R to the seller and that another seller later appears with a better offer R_1. In other words, R_1 is less than R. Contract law ensures efficient breach by conditioning the buyer's ability to breach upon his payment of the original seller's expectation of $R - c$.[24] That payment leads to efficient breach decisions because the buyer will breach the contract only if the offer from the new seller is lower than the operating cost of the original seller.[25] The offer of the entrant must be lower than the avoidable cost of the incumbent for breach to be efficient. Contract law does not require paying the incumbent the offer of the entrant. To do so would simply be a transfer of income from the seller to the buyer, and would not lead to efficient breach decisions. If the seller anticipated that the buyer could breach or pay the going rate whenever a lower price appeared, then the seller would have no incentive to make a transaction-specific investment.

55. In the regulated context, the expected revenue of the incumbent LEC happens to be based on embedded costs because, under cost-of-service regulation, the LEC's capital costs are necessarily used in the calculation of revenue requirements. That calculation does not mean that embedded costs are part of the firm's economic cost. Nevertheless, because the regulated firm's expected revenues reflect those costs, the expected revenues should be used to compensate the firm. The fact that the regulated firm's capital has a lower (or higher) replacement value in comparison with embedded cost is not relevant to the compensation decision. The embedded cost is a part of cost recovery because it underlies the incumbent firm's investment-backed expectation.

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24. *See* Oliver Wendell Holmes, *The Path of the Law*, 10 HARV. L. REV. 457, 462 (1897) ("The duty to keep a contract at common law means a prediction that you must pay damages if you do not keep it—and nothing else."); Horwitz-Matthews, Inc. v. City of Chicago, 78 F.3d 1248, 1251 (7th Cir. 1996) (Posner, J.).

25. This result obtains because the buyer will choose to breach if only if $R > R - c + R_1$. That condition is equivalent to $c > R_1$.

5. Ignoring Opportunity Costs

56. As we have emphasized, the fallacy of forward-looking costs also can arise from the omission of relevant costs. Such is the case when opportunity costs are ignored. In its *First Report and Order*, the Commission lists opportunity costs among "factors that shall not be considered in a calculation of the forward-looking economic cost of an element."[26] Not only does the Commission exclude opportunity cost, but it also offers the following limited definition of the term: "Opportunity costs include the revenues that the incumbent LEC would have received for the sale of telecommunications services, in the absence of competition from telecommunications carrier [*sic*] that purchase elements."[27] That definition is limited because it does not also identify opportunity costs that can arise given markets for the elements or local exchange services.

57. The exclusion of opportunity cost from a definition of forward-looking cost is incorrect because economic costs and opportunity costs are one and the same. "In economics," wrote Armen Alchian in his classic definition of cost, "the cost of an event is the highest-valued opportunity necessarily forsaken."[28] Chief Judge Richard Posner has similarly written in his treatise on law and economics:

> The distinction between opportunity costs and transfer payments, or in other words between economic and accounting costs, shows that cost to an economist is a forward-looking concept. Sunk (incurred) costs do not affect decisions on price and quantity.[29]

He further notes that "[t]he forces of competition tend to make opportunity cost the maximum as well as the minimum price."[30] Similarly, Joseph Stiglitz, the former Chairman of the Council of Economic Advisers, has written in his textbook that "when rational firms and individuals make decisions—whether to undertake one investment project rather than another, whether to buy one product rather than

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26. 47 C.F.R. § 51.505(d) (stayed), in *First Report and Order*, at App. B, at B-29.
27. *Id.* § 51.505(d)(3) (stayed), in *First Report and Order*, App. B, at B-29.
28. Armen A. Alchian, *Cost*, *in* 3 INTERNATIONAL ENCYCLOPEDIA OF THE SOCIAL SCIENCES 404, 404 (David L. Sills ed., MacMillan Co. & Free Press 1968).
29. RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 6-7 (Little, Brown & Co. 3rd ed. 1986).
30. *Id.*

another—they take into account *all* of the costs, the full opportunity costs, not just the direct expenditures."[31] Finally, it is a matter of textbook economics that "opportunity cost is the same from the private and social points of view in the absence of external economics and diseconomies."[32]

58. For inputs that are purchased, the market price of the input provides the best indicator of the opportunity cost of using that input in production; for inputs that are made by the firm that uses them, it is necessary to impute the value by determining the best opportunity forgone due to the firm's use of that input in production. The opportunity cost of selling inputs to competitors depends on the opportunities forgone when the competitor makes use of the input rather than the firm itself. The price of inputs to be sold to competitors is necessarily constrained by the market price of such inputs. A firm providing a product or service, whether voluntarily or under regulatory compulsion, cannot expect to make any sales unless that input is priced at or below the market price for comparable goods.[33]

59. The opportunity costs of selling inputs, such as interstate access, should be defined according to the choices of individual firms based on relative prices in both input and output markets. Efficient network access pricing requires voluntary transactions rather than compulsory pricing. The opportunity cost of network access is the best alternative use for that scarce transmission capacity. Competition will drive the price for network access toward its opportunity cost.

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31. STIGLITZ, *supra* note 17, at 44 (W.W. Norton & Co. 1993) (emphasis in original). That definition coincides with the standard definition in textbooks on regulation:

> The economic concept of costs includes the value of all inputs required for production, including the implicit value of those inputs owned by the producer . . . . Thus, economic costs include both implicit and explicit costs . . . . Implicit costs are defined as the opportunity cost of owned resources, where the term *opportunity cost*, in turn, is defined as the value of a resource in its best alternative use. Explicit costs are the out-of-pocket expenditures on inputs purchased by the firm (which, in the short run, include both fixed and variable inputs).

DAVID L. KASERMAN & JOHN W. MAYO, GOVERNMENT AND BUSINESS: THE ECONOMICS OF ANTITRUST AND REGULATION 32 (Dryden Press 1995) (emphasis in original).

32. JAMES M. HENDERSON & RICHARD E. QUANDT, MICROECONOMIC THEORY: A MATHEMATICAL APPROACH 302 (McGraw-Hill, Inc. 3d ed. 1980).

33. *See* J. Gregory Sidak & Daniel F. Spulber, *The Tragedy of the Telecommons: Government Pricing of Unbundled Network Elements Under the Telecommunications Act of 1996*, 97 COLUM. L. REV. (forthcoming 1997).

C. Cost Causality

60. Economic analysis explains why prices should reflect costs. Prices that cover costs provide incentives to suppliers to provide a good or service. Also, prices that cover costs provide signals to buyers so that the buyer's willingness to pay for the good or service covers its cost. Buyers consequently make correct decisions about purchasing the good or service. Thus, when a supplier and buyer transact at some price, the buyer's willingness to pay is greater than or equal to the seller's costs, and they realize gains from trade.

61. Professors Baumol, Ordover, and Willig subscribe to the important principles of cost causation.[34] However, they reach incorrect conclusions when applying those principles. They observe that

> the customer loop is used to access all types of telecommunications services, including local exchange and inter- and intraLATA toll services, as well as to terminate local and long distance calls. Hence, it is impossible on any rational basis to allocate the costs of the loop among these various telecommunications services that the customer receives. In a competitive market, therefore, a loop's price would be based on the cost of its provision to the customer, irrespective of the customer's allocation of minutes of use among different services. Consequently, the cost of the loop—or any portion thereof—must be removed from the cost of exchange access.[35]

We agree that accounting-based cost allocations do not correspond to economic pricing of capacity, and that such allocations are essentially arbitrary. This is why we have recommended that market pricing of services determine the recovery of common costs rather than regulatory allocation rules.

62. Yet, it is a non sequitur to conclude, as do Professors Baumol, Ordover, and Willig, that "the cost of the loop—or any portion thereof—must be removed from the cost of exchange access." That reasoning would be similar to the observation that a restaurant serves all kinds of meals, and because the cost of the premises (kitchen, tables and chairs, and dining room) cannot be allocated among these meals, the costs of the premises should be removed entirely. By this same reasoning, all parts of the local

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34. Baumol-Ordover-Willig Affidavit at 6 ¶ 12.
35. *Id.*

exchange network would be excluded from access costs except those facilities that are entirely dedicated to an interexchange carrier, such as dedicated lines that link the interexchange carrier's point of presence (POP) to the LEC's end office serving the POP (known as a serving wire center). Part 69 of the Commission's rules requires LECs to charge a flat rate to IXCs to recover the cost of these entrance facilities.[36] However, the process of connecting the serving wire center to the LEC's end office switch, known as interoffice transport, can involve not only dedicated facilities, but also common or shared facilities that connect the LEC end office switch to another office where the LEC's tandem switch is located.[37] If we are to subscribe to the analysis of Professors Baumol, Ordover, and Willig, then common or shared facilities used in the incumbent LEC's switched transport network would also not be included in access costs.

63. Much of the local exchange network is involved in providing originating and terminating access. Moreover, the local exchange network is employed in delivering a variety of services. As Professor Baumol, Ordover, and Willig observe: "Transport and switching of a long distance call originating from a distant exchange is, from the standpoint of the network, the same as transport and switching of a call from within an exchange."[38] By their reasoning, all network costs should therefore be excluded from access pricing because their costs cannot be allocated.

64. Competitive markets do not price services in that manner. A multiproduct firm earns revenues that cover the total costs (both attributable and nonattributable costs) of providing its various services. If a service cannot earn revenues that cover its attributable costs, the firm will exit from the provision of that service. If total revenues cannot cover both attributable and common costs, the firm must close down entirely.

65. What would be the consequences of accepting the recommendation of Professors Baumol,

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36. *Notice* ¶ 25.
37. *Id.*
38. Baumol-Ordover-Willig Affidavit at 6 ¶ 10.

Ordover, and Willig to exclude common or shared costs from access pricing? One possibility is that the costs would be shifted to other users of the local exchange network. In that case, the IXCs would be free-riders on the common or shared facilities, surely an inefficient outcome. The consequences of such an approach would be that the pricing of interexchange services would not reflect the full cost of providing such service. Moreover, provision of access to IXCs below cost would discourage the provision of access facilities: IXCs would have little demand for such facilities because they could obtain subsidized facilities from the LECs.

66. Another possibility is that the LECs would have an incentive to supply access to IXCs only using dedicated facilities, so that regulation would not preclude cost recovery. Such an outcome also would be inefficient because all users of the local exchange network would miss the full benefits of economies of scope—that is, the avoidance of duplication that comes from sharing facilities, such as those between the end office and the tandem switch office.

67. Neither of these possibilities is particularly appealing. It should therefore be apparent that the cost of access to the local exchange for interexchange carriers must also include some payment for those facilities that are not explicitly dedicated to transport but are used in common with other traffic on the local network.

68. Perhaps Professors Baumol, Ordover, and Willig mean to exclude only the local loop from the cost of access, but to retain the cost of other common or shared facilities. Even in that case, however, they do not spell out how the loop will be paid for. As they well know, there is no such thing as a free local loop. Presumably, by the cost causation principle, because the local loop is a "dedicated facility," its full cost is paid by the final customer, much as one might rent customer premises equipment. The costs of the loop, however, are not fully paid for in flat rates for local service. Just as the configuration of the local exchange network was established to provide final services (such as access) rather than unbundled network elements, so also the pricing legacy is based on the pricing of final

services. Although it is true that some customers can purchase dedicated private lines, the option of basic local service continues to be available. Basic local service does not pay the costs of the local loop; rather, it is the services provided using that local loop, including access, that pay those costs.

69. Thus, the problem with the proposal to exclude local loop costs is that it occurs in apparent isolation from other regulatory proceedings, whether pricing of local service, universal service, or unbundling. The exclusion of local loop costs is part of an elaborate shell game in which the costs of the loop are passed along to the next regulatory hearing to be recovered in some as-yet unspecified fashion. This is not at all pricing based on cost causality. It is simply cost avoidance by the IXCs.

D. TELRIC Pricing Is Not Market Pricing

70. Professors Baumol, Ordover, and Willig observe: "By any measure, local exchange and exchange access markets are not competitive *today*, and thus, absent regulation, competitive access rates cannot be expected to result from any profit-maximizing, independent actions of the incumbent firms."[39] They do not, however, supply supporting evidence or reasoning for their assertion, despite their claim (perhaps merely a rhetorical flourish) that "any measure" will suffice to substantiate the proposition. They do provide a citation to the joint work of Professors Willig and B. Douglas Bernheim.[40] But the manuscript for the forthcoming Bernheim-Willig book does not support that proposition. Moreover, the cited manuscript is inconsistent with the assertions about technology that are made in the present affidavit. When discussing the technology of AT&T and other long-distance carriers, Professors Bernheim and Willig seem to recognize that common costs (which include nonattributable fixed costs) are present and substantial:

> Finally, lest one lose sight of the overarching issue, it is worth reiterating that, for an industry with substantial fixed costs, a proper test of competitiveness involves the calculation of *average* costs, including the costs associated with the amortization of fixed

39. *Id.* at 3–4 ¶ 6 (emphasis in original).

40. *Id.* at 3 ¶ 6 n.1 (citing B. DOUGLAS BERNHEIM & ROBERT D. WILLIG, THE SCOPE OF COMPETITION IN TELECOMMUNICATIONS (American Enterprise Institute working paper Oct. 25, 1996)).

capital, rather than *marginal* costs.[41]

As a result, Professors Bernheim and Willig conclude that "it should be obvious that one cannot meaningfully test long distance against the relevant competitive benchmark through direct comparisons between prices and costs."[42]

71. What could be the impediment to such a comparison? Why is it that access charges have not generated any corresponding reduction in long-distance rates? The explanation according to Professors Bernheim and Willig is that, in their view, prices depend on *fixed costs*:

> However, if (as seems likely) fixed costs are rising through time, prices could well fall by less than the decline in access charges. We therefore disagree with those who see this comparison as a meaningful test of competition.[43]

Professor Willig's assertions appear to be inconsistent when comparing local and interexchange telecommunications. With respect to technology, we are asked to believe, without any supporting evidence or reasoning, that long-distance telecommunications has fixed costs but local exchange telecommunications does not. With respect to competition and pricing, we are asked to believe, again without support, that competitive prices in long-distance telecommunications reflect fixed costs while those in local do not (or perhaps should not).

72. Professors Baumol, Ordover, and Willig reiterate their contention that in local exchange telecommunications "the pool of joint and common costs that would be unrecovered from prices that are literally equal to TELRICs is most likely quite small."[44] We cannot agree. Our own analysis has demonstrated, for example, that GTE's joint and common costs are indeed a significant portion of the total costs of establishing and operating a local network.[45] Competitive prices reflect the costs that

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41. BERNHEIM & WILLIG, *supra* note 40, ch. 2, at 83 (emphasis in original).
42. *Id.*, ch. 2, at 84.
43. *Id.*
44. Baumol-Ordover-Willig Affidavit at 9 ¶ 18.
45. Michael J. Doane, J. Gregory Sidak & Daniel F. Spulber, An Empirical Analysis of the Efficient Component-Pricing Rule and Sections 251 and 252 of the Telecommunications Act of 1996, *appended to* Comments of GTE Service Corporation *in* Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Federal Communications Commission, CC Dkt. No. 96-98 (filed May 16, 1996).

companies operating in the industry actually incur. Thus, prices will reflect market-allowed coverage of attributable costs and joint and common costs. Because firms will not operate unless they can cover their costs, the assertion that TELRIC prices are competitive prices is erroneous.

II. THE MARKET-BASED APPROACH TO DEREGULATION VERSUS THE PRESCRIPTIVE APPROACH

A. The Failure to Recognize Actual and Potential Competition

73. Professors Baumol, Ordover, and Willig paint a bleak picture of competition in local exchange telecommunications: "Unfortunately, [facilities-based competition] seems unlikely to emerge as a significant feature of local competition for at least several years."[46] Moreover, they doubt the existence of UNE-based competition under the 1996 Act: "there is no reason to believe that UNE-based competition will emerge any time soon or that it will be sufficiently effective to constrain the ILECs' market power."[47] Even if they can enter, entrants are after all "new." How can they be expected to compete against the "old" LECs? "[I]n the states in which UNEs are in principle available at TELRIC-based rates, UNE-based competitors are in their nascency and there is no assurance that their offerings will be sufficiently acceptable to telecommunications customers to constrain incumbents competitively."[48]

74. That view of competition is wide of the mark. First, facilities-based competition is already in full swing across the nation. Second, UNE-based competition is underway as interconnection agreements that are being negotiated and completed lay the groundwork for the entry and expansion of competitors. Third, entrants such as AT&T, MCI, Sprint, and WorldCom are not "infants." To the contrary, they are large, well-established, experienced competitors. We review the evidence for each of these points briefly.

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46. Baumol-Ordover-Willig Affidavit at 7 ¶ 14.
47. *Id.* at 5 ¶ 9.
48. *Id.*

1. Facilities-based Competition

75. Facilities-based competition is not some distant prospect. Rather, many facilities-based competitors are already in operation, and many others have applied for and received certification for facilities-based entry. Also, the economic incentives for facilities-based entry are present and can be demonstrated empirically.[49] Moreover, many facilities-based entrants have publicly announced their capital investment plans, so that competition has moved beyond "potential" entry to "projected" entry. With *potential* entry, it is a matter of determining whether the economic incentives for entry are present and whether regulatory and technological barriers to entry are surmountable or not; the answers to these questions are then used to determine whether some as-yet unspecified firms will enter the marketplace. With *projected* entry, the identity and plans of competitive entrants are observable, so that the extent of entry is far from speculative.

76. For example, according to Professor Richard Schmalensee and Dr. William Taylor, by the first quarter of 1995, high capacity service losses were 39 percent in Philadelphia, 35 percent in Pittsburgh, 32 percent in Washington, D.C., 27 percent in Baltimore, 39 percent in Los Angeles, 37 percent in San Francisco, 50 percent in New York City, and 37 percent in Baltimore.[50] These numbers indicate the significant inroads into LEC markets by facilities-based entrants and serve to refute claims

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49. Facilities-based entry is a substitute for the purchase of wholesale services or UNEs. Therefore, if the state PUCs set uncompensatory prices for the mandatory sale of those forms of unbundled network access, they will raise the relative price of facilities-based entry and thus suppress demand for it. (The same would be true if the pricing recommendations of the *First Report and Order* were imposed on incumbent LECs as the *quid pro quo* for being allowed to price interstate access under the Commission's proposed market approach.) In the opposite direction one might argue that the facilities-based entry that had been observed to date in local markets is an artifact of high regulated rates in certain market segments. A significant distinction can be drawn, however, between the two cases of regulatory distortion of the decision to undertake facilities-based entry, even if one ignores differences in the reliability and bandwidth by which entrants have distinguished their services from those of incumbent LECs. In the case of facilities-based entry that has already occurred (principally in the form of competitive access providers), long-lived fiber networks have been installed that will remain intact even if a given CAP subsequently exits the market. Its darkened fiber could be relit, and thus the "overhang" of that capacity permanently constrains the pricing of the incumbent LEC. The point is analogous to the argument, noted by the Commission, that an RBOC cannot engage in predation in interLATA markets because, even if it could drive AT&T, MCI, Sprint, or WorldCom from the market, that carrier's fiber capacity would remain intact. *See* Implementation of the Non-Accounting Safeguards of Sections 271 and 272 of the Communications Act of 1934, as amended; and Regulatory Treatment of LEC Provision of Interexchange Services Originating in the LEC's Local Exchange Area, Notice of Proposed Rulemaking, CC Dkt. No. 96-149, ¶ 137 (released July 18, 1996) (citing Daniel F. Spulber, *Deregulating Telecommunications*, 12 YALE J. ON REG. 25, 60 (1995)).

50. Richard Schmalensee & William E. Taylor, Economic Aspects of Access Reform 37 (Jan. 29, 1997), *attached to* Comments of United States Telephone Association.

that there is a bottleneck in the local exchange or that LECs have exclusive control over market share.

77. It was reported that alternative local exchange carriers have over 500 networks that either are operational or under construction, serving over 600 communities, and were expected to have more than 100 competitive switches in operation by the first quarter of 1996, with substantial further growth during the remainder of 1996.[51] In addition, at least 333 central offices, serving more than 45 percent of access traffic, have implemented colocation since 1993.[52] Alternative local exchange carriers include competitive access providers operating fiber optic networks in most of the major cities.

78. In analyzing facilities-based competition, it is important also to include wireless networks, both cellular and personal communications services (PCS). These networks provide local exchange access, both originating and terminating. These networks are economic substitutes for wireline networks. As prices fall for wireless service, these networks increasingly constrain the pricing of wireline services and thus further contradict the view that there is a local bottleneck. It is reported that, using a combination of digital cellular and PCS, "AT&T could begin offering local connections as early as late this year."[53] AT&T already has seven million customers in 320 cities, holds licenses covering areas with 217 million people, and plans to acquire more licenses.[54] Sprint Corp. is deploying a PCS network in sixty-five cities.[55]

2. Competition Based on Unbundled Network Elements

79. Competition based on an entrant's use of unbundled network elements is not a distant dream, but is instead in full swing as envisioned by the Telecommunications Act of 1996. According to the USTA Competition Report of February 10, 1997, there were an estimated 470 final interconnection agreements with another 218 in arbitration. Substantial progress has occurred in identifying the issues to

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51. *ALTS Members Plan for Massive Growth; Focus Shifts to Marketing, Partnering Opportunities*, TELECOMMUNICATIONS REP. Nov. 6, 1995, at 1.

52. USTA Price Cap Filing (Dec. 11, 1995).

53. *Vaulting the Walls with Wireless*, BUS. WK., Jan. 20, 1997, at 85.

54. *Id.* at 88.

55. *Id.* at 85.

be addressed in the agreements, establishing prices, and formulating the applicable adapting federal and state regulation. Entrants are combining UNEs with their existing and planned facilities.

3. Competitors Are Not in Their "Nascency"

80. For Professors Baumol, Ordover, and Willig to suggest that the entrants into local telephony are "in their nascency"[56] is to overlook the identity of these competitors. AT&T is hardly a newcomer to telecommunications. Moreover, it is constructing a national wireless network, having paid $11.5 billion in stock for McCaw Cellular.[57] AT&T reportedly plans to use its own switching equipment in combination with unbundled local loop facilities leased from other local exchange providers.[58] AT&T has a well-established customer base, a strong national brand identity, and serves over 100 million presubscribed lines.

81. MCI is also a seasoned competitor in telecommunications. It is entering local telephony through its subsidiary, MCI Metro, which will construct facilities to serve the business market and later the residential market.[59] In addition, MCI has entered into an agreement with Nextwave Telecomm Inc., a PCS provider that bid $4.7 billion in the FCC's auctions to acquire wireless licenses for the provision of service covering areas with 110 million people.[60] MCI is considering offering the PCS services "as an alternative to regular local telephone service."[61] Finally, as a result of its pending merger with British Telecom, MCI will have a substantial infusion of cash with which to fund its expansion into local telephony.[62]

82. Sprint Corp. is the ninth largest local exchange company, with 6,730,468 access lines and operating revenues of over $3.8 billion.[63] Sprint has joint venture agreements with the cable companies

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56. Baumol-Ordover-Willig Affidavit at 5 ¶ 9.
57. Andrew Kupfer, *AT&T's $12 Billion Cellular Dream*, FORTUNE, Dec. 12, 1994, at 100.
58. Catherine Arnst, *AT&T: Will the Bad News Ever End?*, BUS. WK., Oct. 7, 1996, at 122, 128.
59. *MCI Widens Local Effort*, N.Y. TIMES, Dec. 12, 1994, at C5.
60. Lawrence W. Fisher, *MCI Joins Nextwave in Wireless Communications Venture*, N.Y. TIMES, Aug. 27, 1996, at C3
61. *Id.*
62. *A Marriage of Convenience*, THE ECONOMIST, Nov. 9, 1996, at 71.
63. UNITED STATES TELEPHONE ASSOCIATION, PHONE FACTS 1996, at 8 (data for 1995).

that control Teleport Communications Group (including Brooks Fiber Properties, McLeod, and ICG Communications).[64]

83. WorldCom Inc. has bought the largest competitive access provider, MFS Communications, for approximately $12 billion.[65] WorldCom is thus a fully vertically integrated local exchange and long-distance carrier, that already has local exchange facilities in 45 major metropolitan areas.

84. Clearly, concerns over the "nascency" of entrants into the local exchange are misplaced. The relative levels of experience and abilities of these carriers cannot be viewed as a barrier to their entry into the local exchange. To the contrary, their capacities are evidence of the vigor of the competition in the local exchange that already is in progress.

B. The Janus Artifice: Inconsistency in Pricing and Evaluating Competition

85. The Romans built temples to Janus, the most ancient king who reigned in Italy, who was often represented with two faces because he was believed to know the past and the future.[66] Like Janus, the interexchange carriers alternate between past and future perspectives on markets as it serves their purpose. The result is an inconsistent economic analysis of competition and pricing. When evaluating the prospects for competition, the IXCs look to the past, emphasizing the sunk costs of the LECs and past market share. For pricing purposes, the IXCs look to the future, promoting their notion of forward-looking costs. We have already emphasized the fallacies inherent in the forward-looking cost approach. Those problems are compounded by shifts in perspective that are meant to facilitate desired policy outcomes. At a minimum, the Commission should apply its yardstick in a consistent manner.[67]

86. When evaluating the LECs' costs for pricing purposes, the Commission suggests

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64. E. S. Browning, *WorldCom Deal Gives "Local Access" a Buzz*, WALL ST. J., Aug. 27, 1996, at C1.

65. Mark Landler, *WorldCom to Buy MFS for $12 Billion, Creating a Phone Giant*, N.Y. TIMES, Aug. 27, 1996, at C1.

66. LEMPRIÈRE'S CLASSICAL DICTIONARY OF PROPER NAMES MENTIONED IN ANCIENT AUTHORS WRIT LARGE 304 (1788) (F A. Wright ed., Routledge & Kegan Paul 3d ed. 1984).

67. Children know the Janus Artifice as the Pushmi-Pullyu Phenomenon, named for "the rarest animal of all," "now extinct," that "had no tail, but a head at each end." HUGH LOFTING, THE STORY OF DR. DOOLITTLE 73 (1920) (Bantam Doubleday Dell Publishing Group, Inc. 1988). The pushmi-pullyu was very difficult to catch "because, no matter which way you came toward him, he was always facing you." *Id.*

employing "the most efficient network architecture, sizing, technology, and operating decisions that are operationally feasible and currently available to the industry."[68] As we have emphasized, such an approach is not the way competition works because it does not reflect, as market prices do, the costs of companies in the industry. For the purposes of price regulation, the Commission should rely on the studies of the actual costs of the LECs rather than speculative costs.

87. Measuring costs based on the most efficient network architecture would suggest that the Commission believes that entry by efficient competitors building entirely new networks with the best design and features is not only imminent, but in progress. One would expect the Commission's competitive analysis to mirror that assumption, with entry by efficient competitors being viewed as a feature of the competitive landscape. Yet, the interexchange carriers view such entry as an unlikely and distant prospect. Similarly, the Commission proposes competitive triggers to adjust regulation slowly until competition takes place. Doubtful that facilities-based competition is even feasible, the Commission bases its competitive triggers on implementation of network interconnection and UNE-based competition.

88. If the Commission's market analysis leads it to believe that facilities-based entry is unlikely to occur for years, it cannot avoid using the LECs' actual costs of providing access for the purpose of regulating the price of access. As we have already emphasized, basing a cost analysis on the costs that firms actually incur in the marketplace is the right approach in any case, because in competitive markets prices reflect the costs of existing firms, including competitive entrants. If the Commission believes that facilities-based entry is a reality, as we too believe, then it should move rapidly to grant the LECs pricing flexibility and freedom from unnecessary incumbent burdens that hinder their competition with entrants in the local exchange.

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68. *First Report and Order* ¶ 683.

C. A Market-based Approach to Access Pricing Requires Less Reliance on Regulation Than a Prescriptive Approach

89. The IXCs criticize the Commission's proposed market-based approach and argue for increased regulation under the prescriptive approach. AT&T argues for more access price regulation based on its view that UNE competition will not provide an alternative to access "in the foreseeable future."[69] Such a perspective contradicts the intent of the 1996 Act and ignores the efforts of the Commission, the state regulatory commissions, and telecommunications carriers involved in negotiating and implementing interconnection agreements. Despite AT&T's criticisms, UNE competition does provide competitive alternatives that supplement already active facilities-based competition in the local exchange. AT&T further believes that a market-based approach to access pricing would create social costs because it believes that the regulated rates of the incumbent LECs are excessive. Thus, AT&T expresses its reservations about the effectiveness of state and federal rate regulation while it calls for even more regulation. AT&T's mistrust of market forces is evident but misguided. As we have already emphasized, competition in the local exchange, both facilities-based and UNE-based is significant and can be relied upon to determine efficient prices for access services.

1. The Prescriptive Approach Would Yield Outcomes That Would Differ from a Competitive Market

90. In recommending the prescriptive approach, AT&T again raises the natural monopoly question to suggest that competition in the local exchange is speculative: "[A]s yet there is not even a definitive basis for rejecting the views of many experts that some exchange access and local exchange markets may be natural monopolies."[70] Although one of the authors of this reply affidavit is flattered to be cited by AT&T as an "expert" in this regard,[71] the citation is out of context. In his textbook, *Regulation and Markets*, Daniel F. Spulber writes on the page immediately following the pages cited

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69. Comments of AT&T Corp. at 44.
70. *Id.*
71. *Id.* at 44 n.70 (citing DANIEL F. SPULBER, REGULATION AND MARKETS 3–4 (MIT Press 1989)).

approvingly by AT&T, "Merely asserting that technology exhibits natural monopoly will not demonstrate the need for regulatory intervention."[72] Moreover, he continues:

> It should be emphasized that the market conditions associated with sunk costs and natural monopoly need not be permanent. The natural monopoly characteristics of a regulated firm's technology may be eliminated through demand shifts or technological change.[73]

Evidence indicates that the local exchange no longer exhibits the characteristics of natural monopoly, if indeed such a description applied in the past.[74] AT&T further overlooks the testimony of its *own* expert economic witnesses in recent state arbitration proceedings arguing that local telephony is *not* a natural monopoly.[75] In short, while the Telecommunications Act of 1996 recognized the market and technological changes in the industry and accelerated the process of deregulation, AT&T's arguments for reregulation are inexplicably oblivious to those changes.

91. The Competitive Telecommunications Association (CompTel) argues that access rates will not move to TSLRIC absent a prescriptive approach to access reform.[76] In justifying this conclusion, CompTel raises a number of arguments. First, CompTel makes the oft-repeated assertion that callers do not make the terminating access choice. This concern is misplaced. As we have pointed out in our initial comments, the cost of the terminating access choice is taken into account in competitive markets by

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72. SPULBER, *supra* note 71, at 5.

73. *Id.* at 608.

74. *See* Spulber, *supra* note 49.

75. DAVID L. KASERMAN, JOHN W. MAYO, MICHAEL A. CREW, NICHOLAS ECONOMIDES, GLENN R. HUBBARD, PAUL R. KLEINDORFER & CARLOS MARTINS-FILHO, LOCAL COMPETITION ISSUES AND THE TELECOMMUNICATIONS ACT OF 1996, at 12 & n.11 (July 15, 1996) [hereinafter KASERMAN REPORT] (prepared for AT&T Corp.) (citing Richard T. Shin & John S. Ying, *Unnatural Monopolies in Local Telephone*, 23 RAND J. ECON. 171 (1992)); Testimony of David L. Kaserman, In the Matter of AT&T Communications of the Midwest, Inc.'s Petition for Arbitration with Contel of Minnesota, Inc., Pursuant to Section 252(b) of the Federal Telecommunications Act of 1996, OAH Dkt. No. 9-2500-10733-2, MPUC Dkt. Nos. P-442, 407, M-96-939, at vol 4B, Tr. 111 (Minn. Office of Admin. Hearings/Minn. Pub. Util. Comm'n, Oct. 22, 1996) ("Shin and Ying . . . found that [local telephony is] not a natural monopoly . . . ."). The Shin-Ying study cited by Professor Kaserman used data from 1976 to 1983 and found that LEC costs were not subadditive before the AT&T divestiture. In subsequent empirical research, Professor Ying similarly concluded that over the periods 1976-83 and 1984-91, LECs were not natural monopolies. Affidavit of John S. Ying, Motion of Bell Atlantic Corp., BellSouth Corp., NYNEX Corp., and Southwestern Bell Corp. to Vacate the Decree, United States v. Western Elec. Co., No. 82-0192 (D.D.C. filed July 6, 1994). Previous studies of natural monopoly conducted on the Bell System reached conflicting results. *Compare* Laurits R. Christensen, Diane C. Cummings & Philip E. Schoech, *Econometric Estimation of Scale Economies in Telecommunications*, in ECONOMIC ANALYSIS OF TELECOMMUNICATIONS (Léon Courville, Alain de Fontenay & Rodney Dobell, eds., North-Holland 1983) (AT&T had scale economies) *with* David S. Evans & James J. Heckman, *A Test for Subadditivity of the Cost Function with an Application to the Bell System*, 74 AM. ECON. REV. 615 (1984) (AT&T's costs were not subadditive).

76. Comments of the Competitive Telecommunications Association at 13-14.

customers involved in repeated communications and by carriers in their service offerings to final customers.[77] Second, CompTel believes that price pressures on retail service do not translate into pressures on access charges. Here, CompTel fails to understand that competitive pressures can drive down input costs as well. Moreover, competition for access serves to bring down prices for access. Third, CompTel questions whether there is competition for switched transport, even though they acknowledge that "competitive carriers today provide high-capacity dedicated interoffice transport, and so provide at least some downward pressure on direct-trunked transport rates."[78] Competitors need not provide every product variant for prices to be constrained. Competition for high-capacity dedicated interoffice transport certainly provides sufficient reason for access charges to be constrained by competition. Moreover, with unbundled network elements available, the prices of switching and other services are constrained by the prices of UNEs. Thus, CompTel is misguided to conclude that regulation of transport and of terminating and originating access is required on the grounds that market forces are insufficient.

92. CompTel is correct in its supposition, however, that market prices will not equal TSLRIC. The reason is that market prices do not necessarily equal TSLRIC—that is, attributable average costs—because prices allow firms to recover their total economic costs, including the joint and common costs of supplying goods and services. CompTel, in its call for the Commission to implement the prescriptive approach, seeks an outcome that the market need not, *and should not*, provide.

93. CompTel supports a "reverse Ramsey" approach to access pricing. It seeks to lower access charges to TSLRIC "for those access elements that are least subject to competitive market forces" and to maintain access charges at current levels for those access rate elements that may be subject to competition.[79] One can only be puzzled at the purpose of such a prescription, unless it is to deny incumbent LECs any return on the sale of access, since they would incur losses in all of their markets

77. Affidavit of J. Gregory Sidak and Daniel F. Spulber at 12-13 ¶ 30
78. Comments of Competitive Telecommunications Association at 15
79. *Id.* at 17

as a result of such a pricing policy. Under reverse Ramsey pricing of access, as suggested by CompTel, the incumbent LECs would not sell any access in the overpriced portion, where current rates would be maintained, and the LEC would make losses on the continued sales of access in other areas, where regulators had forced prices to TSLRIC. That outcome would be the opposite of pricing flexibility. It is a recipe for disaster. Access reform means adjusting prices in reaction to market forces, not in opposition to them.

2. Geographic Deaveraging

94. Observation of incumbent LECs confirms that costs differ across geographic areas because the average costs of serving high-density population areas are lower than the average costs of serving low-density areas. Moreover, high-density population areas generally have a higher concentration of business customers, which leads to higher average revenues in comparison with areas of low population density. Broadly speaking, the average net revenues per line are greater in urban areas. Through geographic averaging, regulation has created cross-subsidies from urban to rural customers. There are also regulatory cross-subsidies from business to residential customers. As a consequence, in the initial phase of competition, it should not be surprising that competition is more intense in urban areas than rural areas, because entrants pursue higher-margin customers. Similarly, in its initial phase, competition for business customers has been more intense that competition for residential customers. As competition has developed, it has expanded geographically and has now expanded to competition for residential customers.

95. The key to enhanced competition is rebalancing rates through geographic deaveraging, allowing prices to rise in higher-cost areas and to fall in lower-cost areas, through the forces of competition. The recommendations of the Ad Hoc Telecommunications Users Committee (Ad Hoc) are just the opposite. Ad Hoc would lower prices in those areas where competition is not present. It suggests that "the proposal in the *Notice*—to require TSLRIC price levels for monopoly access services where

competition is not present—would properly replicate the results of competitive markets."[80] Ad Hoc reasons:

> In the present drive to establish a competitive marketplace for access service (which Ad Hoc fully supports), the Commission cannot abandon the primary goal of economic regulation—to ensure that prices charged by regulated firms operating in noncompetitive markets emulate the prices that would be charged in a competitive marketplace.[81]

To the contrary, the best way to "replicate" or "emulate" the results of competitive markets is to decontrol prices and entry and to allow competition to continue to expand. As we showed in our initial affidavit, there is substantial competition in the provision of access services. Removing regulatory controls, including eliminating geographic averaging, will allow this process to continue.[82] The Commission should resist exhortations to return to increased regulatory intervention, and it should refrain from adopting the proposed prescriptive approach.

3. Tests for Competition in the Local Exchange

96. In evaluating competition in the local exchange, the Commission should not create new "tests" of competition or delay the process of granting incumbent LECs the opportunity to compete in the full array of telecommunications markets. Although consideration of demand and supply elasticities and evaluation of barriers to entry may be relevant, market share data are not necessarily informative. As we explain in greater detail below, a high market share by a regulated firm formerly protected by entry controls and subject to price controls does not indicate market power, although substantial losses in market share as entry occurs are a good indicator that market power is not present. The relationship between prices and price caps need not be an accurate indicator of market power because the relationship depends on how the cap was set initially and how it is adjusted. That said, given the requirements of the 1996 Act, the Commission should apply standard tests (as employed in antitrust law) for evaluating the competitiveness of local exchange markets.

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80. Comments of the Ad Hoc Telecommunications Users Committee at 38.
81. *Id.* at 42.
82. Affidavit of J. Gregory Sidak and Daniel F. Spulber at 8-9 ¶ 23, 11 ¶ 28.

97. In addition, the Commission has some readily available benchmarks. RBOCs must pass the checklist proceedings to be granted authority to supply interLATA services. An RBOC receiving such authority clearly should not be subject to additional tests beyond the checklist. The checklist proceedings themselves should not be used as a means of further delaying grants of access pricing flexibility. The state authorization of interconnection agreements should provide sufficient evidence that UNE competition is in progress.

98. Although AT&T argues that it is premature for the Commission to find local exchange markets competitive, MCI goes AT&T one better when it observes that "it is premature to establish the criteria for evaluating the competition faced by incumbent LECs."[83] This is the equivalent of a perpetual moving target. There should not be any delay in establishing the criteria for evaluating competition. Moreover, if, as MCI asserts, the criteria cannot now be established, then how would we know when it *is* time to design such criteria? Perhaps MCI is suggesting that there be criteria for determining when it is time to devise criteria for evaluating competition.

99. MCI criticizes the Commission's market-based approach on the grounds that competition takes time to develop. MCI notes that a "market-based approach to access reform ignores the time it will take and the financial realities faced by new entrants as they try to enter the local market."[84] To the contrary, a market-based approach allows prices and service offerings to adjust to competition as entry occurs, without regulatory attempts to determine the rate and direction of change. MCI makes clear that "even with multiple means of market entry, a new entrant will not be able to enter all places at once."[85] Nor would they be expected to. AT&T, MCI, and other entrants will select those portions of the market that they find to be most profitable. Extension of regulatory controls, without pricing flexibility for incumbents, would only perpetuate existing opportunities for entrants to "cherry pick" parts of the market

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83. Comments of MCI Communications Corp. at 66.
84. *Id.* at 42.
85. *Id.*